Day 7 Notes

Wednesday, December 2, 2015 8:03 PM

Precalculus
Section 10.1 Notes – Day 1
Basic Probability

Name:
Period:

How Much Do You Remember??
Find the probability of:

1. Tossing a "head" on a single toss of a fair coin.

$\frac{1}{2}$

2. Tossing two "heads" in a row on two tosses of a fair coin.

$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$ $2 \cdot 2$

3. Drawing a queen from a standard deck of 52 playing cards.

$\frac{4}{52} = \frac{1}{13}$

4. Rolling a sum of 4 on a single roll of two, fair, six-sided dice.

$6 \cdot 6$

1+3
3+1
2+2

$\frac{3}{36} = \frac{1}{12}$

21
22
23
24
25
26

5. Guessing correctly all 6 numbers is a lottery with 46 numbered balls?

$\frac{1}{{}_{46}C_6} = \frac{1}{{}_{46}P_6}$

Probability Vocabulary
{Key Terms to Know}

- Sample Space: All possible outcomes
- Probability of an event: $\frac{\text{Winners}}{\text{possibilities}} \Rightarrow \left[\frac{\text{desired outcomes}}{\text{sample space}}\right]$
- Probability functions and distributions: $\downarrow 1$ $1 - \frac{\text{outcomes}}{\text{sample space}}$
- Multiplication Principle of Probability:

Event "A" w/ prob x } Prob that A and B $\Rightarrow x \cdot y$
Event "B" w/ prob y } Prob that A or B $\Rightarrow x + y$

1. Kate loves Jelly Beans, except for black licorice! The table below illustrates the overall flavor proportions in a particular Jelly Bean company's mix.

Flavor	Green Apple	Strawberry Red	Blue Raspberry	Purple Grape	Black Licorice
Proportion	0.25	0.3	0.2	0.1	0.15

a. Is this a valid probability distribution? Why or why not?

Yes Add up to 1

b. If Kate picks a Jelly Bean at random, what is the probability that it is:

- Green Apple or Grape?
- Neither Red nor Purple? .4 $1 - .4 = .6$
- Not black licorice? .85

2. In Kevin Lewis' version of Three Card Poker, he uses only 26 cards – 13 black Spades and 13 red Hearts. In a given three card hand that is dealt, what is the probability that the hand consists of:

a. All hearts?

b. All spades?

c. All face cards (J, Q, K)?

d. All Aces?

e. 2 hearts and 1 spade?

Permutations and combinations practice:

1. Which of the following lotteries would you rather play? Why?

   a. You must correctly select 6 numbers, each of which is a different integer from 0 to 29. The order in which you select the numbers is not important.

   b. You must correctly select 4 numbers, each of which is a different integer from 0 to 29. The order in which you select the numbers is important.

2. 24 students in Precalculus are competing in a Unit Circle Speed contest. In how many ways can students be recognized for finishing first, second, and third? (Assume no ties.)